Response to Comments

Comment Deadline: February 22, 2020 by 5:00 p.m.
Draft Waste Discharge Requirements (WDRs) and Monitoring and Reporting Program (MRP)
Order R7-2021-0008
Region 1 Salton Sea Power Plant Units 1-5
Imperial County

Changes proposed in response to written comments made on 02/12/2021 are described below and incorporated into a redline that is available upon request. Please contact Zakary Owens at (760) 776-8962 or Zakary.Owens@waterboards.ca.gov for a copy.

Verbal Comment #	Date	Commenter	Affiliation
Osvaldo Flores (O.F.)	02/12/2021	Osvaldo Flores, Senior Environmental Coordinator	Discharger

ID	Comment	Response
O.F.-1.1	Finding 1 and 13 are incorrect, the capacity of Units 1-5 is 189.72 MW.	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Finding 1 will be revised as follows: "CalEnergy Operating Corporation (CalEnergy), a wholly owned subsidiary of CE Generation, LLC, operates the Region 1 Salton Sea Power Plant Units 1-5, a 189.72 - megawatt geothermal power plant (Facility). The Facility includes one Class II surface impoundment..." Finding 13 will be revised as follows: "… The combined facility consisting of Units 1 through 5, with a total energy generating capacity of 189.72 - megawatts, was renamed "Region 1."
O.F.-1.2	Finding 3 is incorrect, the Location of the Facility is incorrect. It should be South 1/2 of the Northeast 1/4 of Section 5....or southwest 1/4 of the Northeast 1/4 of Section 5	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Finding 2 will be revised as follows: "...The Facility is located .. in the south ½ of the Northeast ¼ of Section 5, Township 12 South, Range 13 East, San Bernardino Base and Meridian, Imperial County, as shown on Attachment A, Location Map, made part of this Order by reference..."

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O.F.-1.3	For consistency with other permit descriptions, please replace pilot with demonstration with respect to the lithium extraction project	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Finding 5 will be revised as follows: "… the WDRs have been updated to reflect proposed changes in site operations, including the addition of a lithium extraction demonstration project plant that will use process effluent from the Facility's clarifiers and return wastewater from the Brine Pond with little to no change in chemical makeup, besides the loss of the extracted lithium…." Similarly, Finding 22 will be revised as follows: "Additionally, the Discharger plans to begin a lithium demonstration project that will withdraw geothermal brine from the Facility's clarifiers and will return the geothermal brine, now devoid of lithium, back into the geothermal process. The demonstration project's process will not alter the geothermal waste's chemical properties other than lowering the TDS concentrations by a few parts per million..."
O.F.-1.4	The Facility description in finding 16 does not accurately describe the system being used at this Facility. Please use the revised description. "Units 1 through 5 are each connected to surrounding geothermal well fields by a series of	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Finding 16 will be revised as follows:

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	conveyance pipes, which transport geothermal brine. To generate electricity, the hot water (brine) is piped from geothermal wells to one or more separators where the pressure is lowered and the water flashes into steam. The steam then propels a turbine generator to produce electricity. The steam is cooled and condensed and either used in the plant's cooling system or injected back into the geothermal reservoir."	"Units 1 through 5 are each connected to surrounding geothermal well fields by a series of conveyance pipes, which transport geothermal brine. To generate electricity, the hot water (brine) is piped from geothermal wells to one or more separators where the pressure is lowered and the water flashes into steam. The steam then propels a turbine generator to produce electricity. The steam is cooled and condensed and either used in the plant's cooling system or injected back into the geothermal reservoir."
O.F.-1.5	In Finding 18, please replace "stores" with holds, as found elsewhere in the document.	The Regional Water Board agrees with this proposed revision, and Finding 18 will be revised as follows: "... In addition to temporarily retaining geothermal brines prior to reinjection, the Brine Pond temporarily <u>holds</u> solids that have either precipitated or settled out of the geothermal brine during the energy generating process..."
O.F.-1.6	In Finding 19, please replace "back to four clarifiers for reuse in the energy generating process" with "into the plant's process for reuse". This is more succinct because clarifiers are described later in the finding and more clarifiers are proposed to be built in the future.	The Regional Water Board agrees with the proposed revision, and Finding 19 will be revised as follows: "...Geothermal brine is routinely piped from the Brine Pond back <u>into the plant's process for reuse</u>. A pump moves the brine from the Brine Pond, through a closed piping system, to the reactor vessel, which is routed to the clarifier, where it reenters the process flow of the Facility...."

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O.F.-1.7	In Finding 20, please delete and replace with "Dimensions of the new clarifier will be optimized to process operational effluent capacity ranging from 1 to 2 million gallons." Exact final design specifications are not known at this time. Also, it appears the word “at” was left out between the words “added” and “Unit 3”.	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Finding 20 will be revised as follows: “... The Discharger proposes to add three new clarifiers. A fifth clarifier (Clarifier #5) will be added at Unit 3 to allow for the removal of additional solids before the spent brine and process fluids are reinjected to the aerated injection well, thereby preventing well plugging. Dimensions of the new clarifier will be optimized to process operational effluent capacity ranging from one to two million gallons...”
O.F.-1.8	In Finding 22, please replace "to the brine pond" with “back into the geothermal process”. This is more accurate because it will only flow to the brine pond directly if/during an emergency event.	The Regional Water Board agrees with the proposed revision, and Finding 22 will be revised as follows: “...Additionally, the Discharger plans to begin a lithium demonstration project that will withdraw geothermal brine from the Facility’s clarifiers and will return the geothermal brine, now devoid of lithium, back into the geothermal process (reactor vessel). The demonstration process will not alter the geothermal waste's chemical properties other than lowering the TDS concentrations by a few parts per million (as a result of minor amounts of extracted lithium)...”

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O.F.-1.9	For Table 1, please consider deleting because it implies that the WDRs need to be updated whenever a new chemical is requested/approved. If keeping, please consider stating "table consists of products approved at the time of permit adoption. Addition of new products will not necessitate an immediate amendment to the permit."	The description for Table 1 will be revised to be numbered Finding 23 and the language will be revised as follows: "... Chemicals are added to the cooling water system and cooling towers to prevent scaling, biological growth, and corrosion and to adjust the water's pH. Chemical classes approved of at the time of permit adoption include Class 5 oxidizing organic peroxides and biocide in the cooling tower; Class 8 corrosives as industrial strength oxidants and biocides; hydrochloric acid for pH control at some locations in the process, and sodium hydroxide for control at other locations in the process, among other chemicals. Table 1 includes a list of the chemical products currently used at the Facility. The use of new chemicals requires Executive Officer approval."
O.F.-1.9	For Finding 24 and Table 2, the Discharger is requesting removal of observation wells from the list and to add statement so that we are consistent with Table 1 (above), "Table consists of brine conveying geothermal wells (production and injection) in operation at the time of permit adoption. Addition or replacement of geothermal wells will not necessitate an immediate amendment to the permit."	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Finding 25 (previously 24) will be revised as follows: "Table 2 reflects ~~current~~ the number and ownership of properties associated with the Facility's geothermal production and injection wells in operation at the time of permit adoption and is included for informational purposes only." The following wells have been removed from Table 2: • IID-7

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		• IID-9 • IID-10
O.F.-1.10	Finding 25 implies that geothermal drilling waste may be placed in the Brine Pond. Please add this to the list of approved waste streams in Finding 28. And the approved waste streams in Discharger Specifications B.9.	The Regional Water Board agrees with these proposed Revisions. Finding 29 (previously 28) will be revised as follows: "All of the following wastewater streams are directed to the Brine Pond and/or to the injection wells for direct injection into the geothermal reservoir: a. Cooling tower blowdown; <u>b. Geothermal drilling wastes;</u> c. Geothermal waste: . . ..." Discharge Specification B.9 will be revised as follows: "The Brine Pond is only permitted to receive the following waste streams: <u>a. Geothermal drilling wastes;</u> b. Geothermal brine and brine precipitates (solids). . . .."

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O.F.-1.11	Finding 56.f seems to have been switched from a “100-year storm event”, found in previous WDRs, to “1000-yeasr storm event.”	Class II surface impoundments must have sufficient freeboard to accommodate precipitation from a 24-hour, 1000-year storm event pursuant to Table 4.1 of California Code of Regulations, title 27, section 20320 and as required by section 20375. In no case, however, can impoundments have less than two feet of freeboard. Here, the difference between a 24-hour, 100-year storm event and a 24-hour, 1000-year storm event is approximately two inches. Because the Discharger has built the pond to include two feet of additional freeboard, the minor increase in storm capacity is easily compensated for without requiring additional capacity to be constructed. No changes are proposed in response to this comment.
O.F.-1.12	Please consider revising the language of Finding 59 to state “Because the facility generates steam from a geothermal source, a non-fossil or nuclear fuel, the facility is at present not subject to the requirements pertaining to the discharge of storm water.“ instead of “Because the Facility generates steam electric power, the Discharger indicates that it has not enrolled in the Industrial General Permit”.	No changes are proposed in the response to this comment. The Finding accurately states the exception that the Discharger is relying upon for not enrolling in the Industrial General Permit.
O.F.-1.13	In regard to Finding 63. please verify that Corrective Action, Post Closure, and Closure Activity Financial Assurances are/are not needed for a waste management unit that plans to be clean closed	In regard to Finding 64 (previously Finding 63),facilities that have an approved Preliminary Closure Plan for clean closure of the waste management unit do not need post-closure financial assurances; however, corrective action and closure financial assurances are still required.

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		Note that Financial Assurance Specifications G.3 and G.4 require financial assurances for corrective action and closure, respectively. There is no similar requirement for post-closure financial assurances in the Financial Assurance Specification sections (G.1-G.6).
O.F.-1.14	In Finding 66, please replace the word “Facility” with the words “surface impoundment” or “waste management unit”. The word Facility was defined in Finding 1 to imply the entire geothermal power plant, but the Waste Discharge Requirements only regulate the Class II Surface Impoundment.	In regard to Finding 67(previously Finding 66), “Existing facility” is a term of art under CEQA and is the name of the particular categorical exemption cited and relied upon by the Regional Water Board. Moreover, the WDRs regulate the entirety of the waste management facility, even though the majority of requirements pertain to the class II surface impoundment. No changes are proposed in response to this comment.
O.F.-1.15	In regards to Specification B.4, the Discharger is “requesting clarification on criteria to determine COC concentration limits given that groundwater in the Imperial Hydrologic Unit is classified as having beneficial use for Municipal Supply (MUN) with water quality objectives that include the MCLs. The MRP on the other hand sets forth three methods by which COCs can be set e.g. default limits, CLGB and or by Procedure for Approval of Concentration Limits. One or all of the methods could reveal the COC concentration limits above the MCLs -which is probable- because of historically high regional concentrations of some metals, TDS, etc.”	The Regional Water Board acknowledges this concern and is aware of groundwater chemistry variability within Imperial County. The historically arid and farmed Imperial Valley has a large number of factors that affect groundwater quality. These Waste Discharge Requirements require that a technical report be submitted along with the next annual report which will determine the concentration limits for the COCs. For the report, the Discharger has the option of several statistical methods, per title 27, and may use all available groundwater data. Note that pursuant to Part III.A.2.ii of the MRP, the concentration limits for naturally-occurring constituents are the background concentrations determined through inter-well or intra-well comparisons, not the MCLs. The goal is to detect any release(s) from the waste management unit,

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		which should not be discharging to areal groundwater or surface waters. Please also note that under California Code of Regulations, title 27, section 20420(k)(7), if a release is detected, the Discharger may demonstrate that a source other than the waste management unit caused the release. The Discharger would not be expected to remediate discharges of wastes from an outside source, e.g., nonpoint source discharges from irrigated agricultural lands.
O.F.-1.16	For Special Provisions I.2.C, it is requested that the cleanup goals be observational for small releases of liquid brine. Properly documented, clean -up would consist of the removal of all visibly impacted soil in terms of depth and extent, instead of using laboratory samples to determine background.	The WDRs in Special Provision I.2 require confirmation sampling for cleanup of spills of 150 gallons or more of brine. No changes are proposed in response to this comment.
O.F.-1.17	For Standard Provisions J.12, please define field activities, e.g. sampling, clean-up, spill assessments (including 24-hour spill notification) requiring direct supervision of PG/PE. On a practical level this could be difficult to comply even under ideal circumstances.	Standard Provision J.12 is meant to convey legal requirements imposed by Business and Professions Code sections 6735, 7835, and 7835.1. The Regional Water Board is unable to identify every instance that could encompass “field activities” in this response that might require a California registered professional. “Field activities” would include any activities requiring the certification of a registered professional, e.g., major repairs, major upgrades that would possibly require an update to the WDRs. It would not necessarily include routine maintenance and repairs that are reported in the semi-annual Self-Monitoring Reports. Business and Professions Code section 6735 provides in relevant part:

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		All civil (including structural and geotechnical) engineering plans, calculations, specifications, and reports (hereinafter referred to as “documents”) shall be prepared by, or under the responsible charge of, a licensed civil engineer and shall include his or her name and license number. Interim documents shall include a notation as to the intended purpose of the document, such as “preliminary,” “not for construction,” “for plan check only,” or “for review only.” All civil engineering plans and specifications that are permitted or that are to be released for construction shall bear the signature and seal or stamp of the licensee and the date of signing and sealing or stamping. All final civil engineering calculations and reports shall bear the signature and seal or stamp of the licensee, and the date of signing and sealing or stamping. If civil engineering plans are required to be signed and sealed or stamped and have multiple sheets, the signature, seal or stamp, and date of signing and sealing or stamping shall appear on each sheet of the plans. If civil engineering specifications, calculations, and reports are required to be signed and sealed or stamped and have multiple pages, the signature, seal or stamp, and date of signing and sealing or stamping shall appear at a minimum on the title sheet, cover sheet, or signature sheet. Business and Professions Code section 7835 states in relevant part: All geologic plans, specifications, reports, or documents shall be prepared by a professional

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		geologist or licensed certified specialty geologist, or by a subordinate employee under his or her direction. In addition, they shall be signed by the professional geologist or licensed certified specialty geologist and stamped with his or her seal, both of which shall indicate his or her responsibility for them. Business and Professions Code section 7835.1 states in relevant part: All geophysical plans, specifications, reports, or documents shall be prepared by a professional geophysicist, licensed certified specialty geophysicist, professional geologist, licensed certified specialty geologist, or by a subordinate employee under his or her direction. In addition, they shall be signed by the professional geophysicist, licensed certified specialty geophysicist, professional geologist, or licensed certified specialty geologist, and stamped with his or her seal, both of which shall indicate his or her responsibility for them.
O.F.-1.18	Please delete the words “unsaturated zone detection monitoring” form the first page of the Monitoring and Reporting Program. This Facility is currently not required to have an unsaturated zone detection monitoring	The suggested revision will be made. Please note that unsaturated zone/vadose zone monitoring may be required at a future time. See MRP at Part II.B, Unsaturated Zone Monitoring, which states: There is no unsaturated/vadose zone action monitoring program required at this time.

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O.F.-1.19	What is the frequency of monitoring and reporting for Surface Water Monitoring C.2 Seep Monitoring.	Seeps must be monitored when identified in proximity to a waste management unit. If a seep is observed, at least one sample of the seepage must be taken pursuant to Part II.C.2.c of the MRP. Oral notification must be made to the Regional Water Board within 48 hours as well as a written report submitted within seven days per Part II.C.2.a of the MRP. Part II.C.2.f provides that seeps that continue to exist for more than one monitoring period must be monitored on a semi-annual basis. Of course, the Executive Officer has authority to require more frequent sampling of the seep if warranted.
O.F.-1.19	Please update Table 6 Geothermal Solids Monitoring to reflect semi-annual monitoring and reporting frequency.	Table 6 of the MRP will be updated to reflect a semi-annual reporting frequency.
O.F.-1.20	In regard to Surface Impoundment Monitoring D.4 LCRS Monitoring, please confirm if the LCRS needs to be tested if it is actively collecting and removing leachate (it is not a “dry” system).	Annual testing is indeed still required even if it is not a “dry” system. The requirement in question is based on California Code of Regulations, title 27, section 20340(d) is entitled “Clogging” and states follows: Clogging - LCRSs shall be designed and operated to function without clogging through the scheduled closure of the Unit and during the post-closure maintenance period. The systems shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions.

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O.F.-1.21	Please Confirm that Part III A.2b. Concentration Limits greater than background can ONLY occur for wells that are associated with Corrective Action Monitoring (which implies that a release above background level has occurred and the well has also detected the potential release).	Part III.A.2.b of the MRP specifically states "…A concentration limit greater than background will only be considered for COCs present in monitoring wells associated with corrective action monitoring. …" Please also note that under California Code of Regulations, title 27, section 20420(k)(7), if a release is detected, the Discharger may demonstrate that a source other than the waste management unit caused the release. The Discharger would not be expected to remediate discharges of wastes from an outside source, e.g., nonpoint source discharges from irrigated agricultural lands.
O.F.-1.22	Part IV.A.2.e, Annual Waste Summary, please replace "Facility" with "waste management unit"	The Regional Water Board will revise the Draft WDRs to reflect the new information received. Part IV.A.2.e, Annual Waste Summary will be revised as follows: "An annual summary consisting of the total volume of geothermal wastes generated at the waste management unit. The summary shall contain a table that lists each category of waste and the volume accepted at the waste management unit during the reporting period."